

CAMPUS PLANNING

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CHAPTER I

INTRODUCTION

Today's colleges and universities are being challenged as never before. Increased enrollment, changes in higher educational techniques and programs, and increased complexity of the academic and physical campus structure are placing unparalleled responsibilities upon these institutions of higher learning. Even the demands of society upon these institutions have become so broad that the present college and university programs and physical facilities are unable to provide the services expected of them.

America's future depends largely upon the intellectual development of the population. Colleges and universities are responsible for providing facilities where higher education may be obtained. Colleges and universities also influence the student. These influences must not only be confined to academic courses, but also include the environment necessary to provide an atmosphere conducive to study where the student may establish solid values and relationships.

Administrative bodies of all colleges and universities must provide a timely response if wide spread chaos is to be avoided. The challenge has been given; colleges and universities must respond. Some educators see the challenge and have acted accordingly. But unfortunately, a majority of institutions have not; and the few that have, are reacting only with an extremely limited approach.

As a response, comprehensive campus planning is imperative as a prerequisite in the development of the future structure of college and university campuses. This study investigates the importance of campus planning in relation to the various challenges

presently facing institutions of higher learning. A campus planning procedure is advocated as the means of establishing an effective comprehensive planning system.

CHAPTER II

HISTORY OF CAMPUS PLANNING

The application of comprehensive planning principles to campus design is a recent technique; therefore the question arises as to how the older institutions of higher learning developed. In order to gain an insight into this question and also to investigate the evolution of campus planning, a review is needed of the past history of American college development.

Colleges originated in the medieval system of guilds of masters and scholars. The north European expression served as the model for the colonial colleges and may be traced through Cambridge and Oxford and even as far back as the University of Paris.

Historians organize the evolution of American higher education into four general categories: the colonial college to the Revolutionary War, the expansion of the college, the growth of the university after the Civil War (roughly parallels the industrial revolution), and the broadening of the base of higher education, which is the segment of evolution we are now experiencing.¹

The desire by the colonists for a literate clergy, and a body of orthodox lay professionals, plus the determination of the early settlers to preserve the old world intellectual and cultural traditions, spurred the founding of early colleges in the United States. At first the colonists attempted to establish a central university modeled after the English pattern, but the vastness of the land, long travel distances, and general poverty made that plan impossible.

¹Richard P. Dober, Campus Planning, (Reinhold Publishing Company, 1963) p. 13.

Early colonial colleges, with the exception of William and Mary College, are important for their building types rather than for examples of campus planning. These first colleges varied in size and strength, but all shared a similar educational curriculum of liberal arts with a central core of classical languages and literature. Towards the end of the eighteenth century important changes and modifications were made through the addition of mathematics, the natural sciences and modern languages. These colonial colleges, while considered more as a promise than a performance, were important because they were evidence that the heritage of higher learning had not perished in the American wilderness.

The earliest evidence of any conscious campus planning appears in the drawings for William and Mary College (1699), Williamsburg, Virginia. Here the arrangement of college buildings on the basis of site conditions and an overall design intention or program relationship is evident. Williamsburg was the fourth planned town in the English colonies in North America. Developed by Theodorick Bland, the grand plan included a series of reciprocal axes with the colonial capitol placed at the east end and the college located at the west. Historians question whether Sir Christopher Wren drew the plans for the college; Professor Edward Sekler of Harvard University, a Wren expert, believes he did not. While Wren may not have contributed directly, his influence as a planner and architect is found in the town plan and the first American professionally designed college building.

Harvard may also lay claim to the primitive firsts in campus politics, campus planning, and college architecture. The increase in number of students in 1717 required Harvard to plan for additional space. A dormitory building one hundred feet in length

designed and classified as a "Double House" was recommended. After much deliberation the recommendation was followed, and Massachusetts Hall was constructed and opened in 1720. The university archives which contain two plans for the dormitory, one by Benjamin Wadsworth and the other by President Leverett. The plan by President Leverett is considered to be the drawing from which the actual structure was built.

It was approximately a century later before coherence and order in arranging higher educational buildings on a site were attempted. While questioned, this honor is usually bestowed upon John Trumbull's plan for Yale (1792).

The first designed campus plan used in the United States was prepared in 1813 by Joseph Jacques Ramee for Union College, Schenectady, New York. Ramee was introduced to Eliphalet Nott, then President of Union College, by David Parish, a land owner from the north county and an international financier. Parish had met Ramee in Europe where the practice of the noted architect and site planner had been disrupted by tides of war. He sailed to the United States in 1811 to serve as an architect for David Parish.

Ramee's plan rejected the monastic self-containment of the Oxford and Cambridge traditions and established a rectangular court of honor flanked on both sides by two buildings which housed students and instructors. A U-shaped colonnade connected three other buildings which surrounded a Pantheon. Ramee was well trained in landscape design and site planning and all of his drawings show a sensitive regard for locating structures.

The unusual aspect of his plan and efforts to establish campus planning in American institutions is that for almost one hundred and fifty years it has continued to

guide the central campus of Union College. The two L-shaped wings as well as a garden suggested by Ramee were constructed during President Nott's tenure. The Pantheon was constructed during the latter part of the nineteenth century and the easternmost section was begun in 1961 with the erection of Schaffer Library.

Thomas Jefferson stands out as the most extraordinary master planner among American educators. He established the curriculum for the University of Virginia, selected the site, designed the buildings, wrote the specifications, supervised the construction, picked the first instructors, served as Rector, and rendered duty as the influential member of the Board of Overseers.

The University of Virginia plan at Charlottesville, was not established on a "consciously used architectural precedent", but was an original concept. Thomas Jefferson's first scheme drawn in 1817 was that of a simple square approximately eight hundred feet on a side but because of the shape of land acquired by legislative grant, the plan was modified to that of rectangle.

During the development of the plan Jefferson solicited the comment from several master builders and architects. William Thornton was responsible for many of the suggestions concerning the detailing of individual buildings, and Benjamin Latrobe restricted his comments to the site plan. The final design contained two parallels linked by a rotunda and colonnade. These parallels housed classroom pavilions with "dry connections" between buildings. No two pavilions were alike in detail for they were to serve as architectural specimens. Two rows of residential quarters were placed in lines behind the parallels and bound to them by a serpentine brick wall. Although the incorporated ideas of both Thornton and Latrobe were utilized in the final plan, Jefferson

would not change the nucleus of his original scheme. Jefferson's University of Virginia Campus Plan is commendable for establishing a national form to an educational program and presents an excellent example of consideration and correlation of site and functional arrangements.

During the period from 1817 until the Civil War, many colleges were built but very little was accomplished toward further development of campus planning. The Northwest Territories were opening and as the civilization moved to the west, so did college development. Up until the time of the Civil War, 516 colleges were founded. The causes of this rapid growth were attributed to a growing population, sectarian rivalry, and an abiding faith that no matter how modest the institution, higher education was a symbol of progress. Though these new institutions were given the name college, most of them were not much more than secondary schools sheltered in a frame building in a log cabin settlement.

After 1865, the importance of the college was replaced by the university which reflected the enlargement of the academic world. The universities were stimulated by a dual purpose, the disinterested pursuit of truth through original investigation and the concept of the university as a center of learning, offering many diverse subjects.

During the next quarter of a century the college and university campus underwent a change from campuses of one or two buildings to those diverse in form, shape and function. Although this expansion demanded broader solutions to the varied problems, the architects continued using the common mold of historic style of design.

It was not until 1893, that the architects found in the singular architectural order and grand plan of the Columbian Exposition, an ideal and method to give some form to

campus growth. Although preliminary examples of planning may be found in the composition of William Burges for Trinity College (1878) and Henry Ives Cobb's University of Chicago (1893), it was the exposition which marked the important beginning for campus planning.

In the following years, the Hearst competition for the University of California campus plan generated considerable enthusiasm across the United States, even abroad, toward developing campus planning. By 1929, approximately one fourth of the leading two hundred colleges and universities had adopted some sort of plan for arranging spaces and buildings. Since 1929, campus planning has slowly become an important consideration of college and university administrations. This evolution has not been an easy or rapid one, and many varied concepts, ideas, and approaches have been applied in attempts to solve the many problems of these institutions of higher learning.

CHAPTER III

FUTURE CAMPUS GROWTH

Educational experts claim that there will be room on the American campus in 1970 and 1975 for every student who seriously desires an education past the high school level. But unless some form of comprehensive campus planning is established by these institutions of higher learning, there is danger that the needed facilities will be provided in a series of crash programs where expediency rather than quality will be the practice. The result will be over crowded campuses and misplaced academic slums which will be educationally self-defeating and a drain both educationally and financially on future generations.

Enrollments. The current enrollment increases experienced by all institutions of higher learning are resulting in a fantastic student growth on campuses from coast to coast. As the population of the United States increases each year, so does the number of people eligible for a higher education. Furthermore, there is evidence that a growing percentage of the population desires some form of education beyond the twelfth year. In 1951, twenty-four per cent of the 18-21 year age group was enrolled in higher education. In 1961 the enrollment increased to thirty-seven per cent of this same group. This surge of students into colleges and universities is further evidenced in the number of students registering for the first time in a degree program. In 1959, 827,000 students enrolled for a degree; but in 1960, 930,000 entered as freshmen. This number steadily increased until in 1962, when 1,038,000 students enrolled for the first time in a degree program.

Future enrollment projections also indicate an even more pressing need for colleges and universities to prepare themselves for a potential student growth far beyond their present ability to provide adequate accommodations. In 1970, American colleges and universities which now enroll an estimated total of 4,118,000 students will have to accommodate more than 7,000,000 and approximately 8,500,000 by 1975.² Because of this fantastic student enrollment growth, all institutions of higher learning are faced with an immense building program, which the Federal government estimates will total approximately 19 billion dollars between now and 1972.

All institutions are expected to expand, though no one knows exactly how much each college or university will individually assume. Of the approximate four million students who were enrolled in 1960 in degree programs at accredited institutions, seventy per cent were matriculated at colleges and universities. Teachers colleges and junior colleges, each accounted for ten per cent with the remainder distributed among private schools and other types of institutions. The percentage of students in private schools has been decreasing slowly since the beginning of the century. In 100 students 60 are now enrolled in publicly controlled institutions, but if teachers colleges and junior colleges were excluded the enrollments would then be about equally divided between private and public schools.

The distribution of enrollment has an important relationship to the future needs, desires, and programs of institutions of higher learning. From 1939 to 1960 there was an approximate increase of 2.2 million students enrolled in colleges and universities

²Bricks and Mortarboards (A report on college planning and building), p. 7.

over the country. During that same period, 86 per cent of the student enrollment increase was accounted for in four-year institutions. Year by year this figure has dropped from 84 per cent in 1955 to 79 per cent in 1960. This decrease is accounted for by the rapid growth of the number of junior colleges and the expansion of their total enrollment.

The enrollment distributions between private and public schools indicate extreme regional variations. Those sections of the country that are the oldest and have the longest history of higher education have the highest percentage of enrollments in private institutions. Those sections which have had most of the population expansion and shorter histories are relying on public institutions. A more significant trend is that students are enrolling in public institutions at a faster rate than in private institutions. This slowing of enrollment growth rate in private institutions is apparently caused by lack of resources and not lack of desire for continued growth.

The average enrollment per institution also varies among the different types of universities, colleges, and junior colleges. Universities and technological institutions have the highest average enrollment per institution. Since they offer specialized courses and advanced degrees and support research, the unit cost of instruction is high. Therefore, large enrollments are required to maintain such facilities. Teachers colleges and liberal arts colleges contain the next highest average enrollments, and junior colleges usually have the smallest average enrollment per institution.

The percentage distribution of enrolled males and females also has an important relationship to the future needs, desires, and programs of all colleges and universities. Women enrolling in higher education has increased steadily since 1945, but the

percentage is not yet near the 1919 peak when 47 per cent enrolled in higher education. Now approximately five of every eight students enrolled in degree programs are men. National predictions indicate a significant factor which may change this situation. There is a relatively greater possibility of a percentage increase for future enrollment of women in the age group 18-21 than there is for men in the same group. If this shift upward in enrollment of women does occur, significant changes are needed not only in the institutional goals and programs but also in the overall design of the campus plan.

While the accelerated population growth itself will increase enrollments, there are two other important demands or reasons why colleges and universities should grow and add facilities for a higher education. First is the demand for increased study of science and technology which has been one of the direct influences upon increased enrollments found on college and university campuses. In the past, the wealth of a nation was measured by capital and population but today, a truer scale of progress rests in the capacity of a country to promote progress not only in science but also in its application in technology. There is a correlation between the numbers of people holding degrees and the distribution of the benefits of science and technology; therefore, it is the responsibility of the colleges and universities to provide the academic facilities necessary to assume an adequate scope of study and investigation for all prospective students in the scientific professions. The laboratories of the universities and professional schools have also made great advances in science and technology research. The importance of their contributions to society has made this field of study extremely popular resulting in increased enrollments and overcrowded facilities. The colleges and universities must consider the enlargement of existing facilities or the establishment of

entirely new research areas in order to satisfy the demand and continue the high research standards of the institutions.

The second reason which is causing an enrollment problem in universities and colleges is the realization by the future generation of the importance that a higher education will have in the future. Because of the demands of the extremely progressive society, the possession of a higher education plays an important role in the success and future of young persons of today. Not many years ago the individual who was fortunate enough to attain a high school education was able to establish himself financially and socially in a well rounded life. As the country progressed, the person who desired advancement found that a high school education was not enough. In order to meet the demands of a progressive society a college education is a necessity, not a luxury. The requirements upon businessmen, professional people, and the general public have continued to increase in scope, until today the young person desiring a successful future must seriously consider continuation of his education beyond the bachelor degree. Thus, high school students of today are attending colleges and universities not only in greater numbers, but for longer periods of time, and demanding more versatility in study programs.

The Changing Student. The students themselves are also directly responsible for campus revision and institutional growth. Not only are the courses changing, but the students are also changing. They are better prepared than their predecessors of a decade ago, and in many instances they arrive on the campus with a year or more of college level courses in background studies. The traditional freshman courses which in the past seemed to satisfy a thirst for knowledge no longer suffice for students of today.

Students are demanding a broader scope of subjects coupled with a more intense study program. In addition the present college freshman will more likely continue education at the graduate level forcing an expansion problem on the graduate school.

Campus Growth is Inevitable. Education holds the key to the future of the country. Colleges are presently producing not only more but better prepared graduates. Many colleges and universities are offering courses in subjects that were non-existent ten to twenty years ago, and research programs have expanded far beyond all expectations. The students themselves are demanding more from the institutions, beginning at the freshman level and continuing throughout the graduate program. All this academic progress in turn demands college and university growth; which make necessary growth in new locations, growth in existing institutions, but most important, growth in adequate comprehensive campus planning.

CHAPTER IV

CAMPUS COMPLEXITY

The present day American colleges and universities reflect a complex pattern of not only numerous purposes and duties but also responsibilities. So widespread are the functions of these institutions, that sometimes it appears that their primary responsibility is lost in a multitude of activities.

Academic Responsibilities. Education still remains the number one purpose of colleges and universities. As enrollment continues to grow, the academic responsibilities of higher educational facilities must also increase in scope of study and in methods of instruction. Large or small, the schools must provide increased academic programs at the undergraduate, graduate, and research level. Not only should the existing programs be expanded, but exploration of unheard of fields of study will be necessary in the future complex academic structure.

Student, Faculty, and Visitor Responsibility. Colleges and universities are also responsible for the students, the faculty, and the visitors to the campus. The campus is similar to a city because of its influence upon the lives of a great number and variety of people, on or near it, who work, play, visit, eat, and acquire goods and services from the facilities. Among these people are the students; undergraduate and graduate, male and female, single and married, fraternity and independent, full-time and part-time, credit and non-credit, residential and commuter, and faculty; professor and visiting lecturer. These people also represent the full ranges of ages, races, creeds, and national origins. In addition to the students and the faculty, there is the constant flow of visitors. These visitors represent convention and conference personnel,

prospective students, parents, alumni, sports fans, and congressmen. All of these people must be transported to and from the campus as well as about it. Many of them must be fed, some must be housed, and others must find on or near the campus places of worship, study, relaxation and play. Goods and services must also be provided if the campus is not located convenient to an urban area which usually provides such facilities.

Thus the college and the university must become involved, although on a smaller scale, with the complex responsibilities of city administration. Such responsibility includes traffic, housing, zoning, utilities, health and sanitation law enforcement, recreation, and of course, development of the surrounding area. Not only must they solve these, but the solution must be accomplished within the framework of the college or the university as a cultural and intellectual center of our society.

Physical Responsibilities. There are also the physical responsibilities which fall upon American colleges and universities. These vary from college to college, not only in intensity but also in scope. Each college or university must therefore solve its own physical responsibilities and develop design patterns and functional solutions individual in nature to the institution itself.

There are many excellent examples of such physical designs. A few project the instructional facilities needed to meet the demands of increased enrollment, of the relationship between the college or university and the community, of the location of new individual buildings, of parking, of student and faculty housing requirements, of urban renewal, and in some instances the establishment of an entirely new campus plant. The examples cited represent only a limited number of the physical responsibilities that

arise daily on campuses from coast to coast, but they give added emphasis to the complexity of the physical responsibilities.

Existing campuses have additional physical and academic responsibilities with which, fortunately, the newly established colleges and universities are not particularly involved.

The existing college or university, unlike the new institution, possesses a campus around which community development has already taken place. In order to alter the size and shape of the existing site, additional property must be purchased, and this solution sometimes becomes financially difficult. The older college also has a collection of existing buildings, some of which are old and inefficient, and the newer construction may be blocking expansion because of improper location. In order to develop a pattern for orderly growth, the administration must decide upon renovation or even removal of structures which sometime hold immeasurable value in traditions and sentiment.

Even the academic responsibilities of the existing institution are more complex. Change in the educational programs and new methods and procedures may be difficult to adopt because of an established faculty, traditions, and administrative habits. Thus, not only must the existing physical plant respond to modification, but also the faculty and administration must accept the responsibility of change in order to adapt to the demands of a progressive society.

It is quite evident that because of the complexity of colleges and universities of today, campus plans must not state only general goals but must show specific detail as well. These plans should be concerned with not only the immediate responsibilities,

problems, and requirements but also it is imperative that long-range considerations be included. Planners must implement educational goals and objectives of today but at the same time prepare the campus structure for future demands. Comprehensive plans are the instrument which reflect the campus administrations decisions. Therefore, the planners should reflect not only the institutional policy on land-use development, academic and research programs, enrollment, and instructional facilities, but also should indicate the institution's responsibilities as a service facility. Campus planning should incorporate the widest range of academic opinions and professional planning techniques regarding how the institution should grow, but the final comprehensive plan must be singular in solution and individual in design for the entire campus to serve the American Society.

CHAPTER V

THE PLANNING PROCESS

Campus planning is the premeditated guidance of the amount, quality, use, and location of facilities for higher education so as to achieve a predetermined objective. The plan is usually illustrated as a physical form, and depending upon the scope, the form may vary from a portion of a building to the entire campus and its environs.

Campus Types. For convenience, campus plans are grouped into two types or categories, project plans and development plans. Project plans are strong commitments to action on specific program requirements. They usually cover short time intervals and involve a smaller portion of the campus, such as an individual building rather than the entire physical plant. The development plan usually covers the entire campus or a large part of it, and requires a lengthy time span to complete. Programs for development plans are less detailed than project plans, and the designs are usually quite broad in scope. Such plan types are distinguished by the time span covered, the area encompassed, the precision of programing and the characteristics of design.

Time Spans. The time span of any campus plan will vary from institution to institution, but is generally influenced by the number of years covered by the projected future enrollment, capital budget program, and the degree of control the institution has in regulating growth. The usual planning periods are classified as short-range, middle-range, and long-range programs.

The short-range plans have a five year target date or for an expected enrollment increase of two thousand students. These plans are definitive commitments to construct a facility or improve the land.

The middle-range plans accommodate change by giving adequate time for evaluating decisions and preventing too rash and quick an investment in undesirable facilities. Middle-range plans have a ten year target date or are based upon an expected enrollment increase of five thousand students.

Long-range plans allow some measure of discretion and decision for future generations. Yet, they provide sufficient information for evaluating the change and growth that must be planned earlier. Many institutions utilize the long-range means for establishing the faculty needs, which have a target date of twenty years or an expected enrollment increase of approximately fifteen thousand students.

Long-range Plans. Since long-range planning utilizes ten to twenty-five year enrollment projections it appears to be the most valuable of the three planning periods. The midpoint, seventeen years, is a desirable long-range period and has a fairly high percentage of predictability. By use of such a period, the future campus plan may be based upon actual births since nearly all who will enroll seventeen years later will already be born at the time the plan is developed. This situation is important since the projected enrollment figures are expressed in the number of anticipated students and therefore may be transferred into land-use requirements for planning purposes. These land-use requirements will then be a basis in determining how much classroom, laboratory, office, library, housing, playfield, parking space, and other facilities will be needed.

Long-range planning examines conditions which will affect the future of the campus and relates them to immediate and short-range decisions. It also places restraints on short-term development so that provisions are made for future physical

growth in later years. Such restraints include non-building zones which maintain desirable densities, the location of land reserves for future development programs, the establishment of permanent easements for future roads and utilities, and the reservation of an area or areas in the institutional environs which may be needed for future expansion.

Campus Area. The area encompassed by a campus plan is extremely important to the success of the plan. Many institutions rely on the narrow definition of a campus plan and confine such activity only to the land it owns. This approach lacks the vision required to develop the campus in its entity. Most colleges and universities are directly dependent upon the communities in which they are located for services, supplies, and other commodities the institutions cannot or do not provide for themselves. Housing, commercial services, and recreational facilities are a few examples of particular needs which link the campus to its environs.

Not only are the campuses dependent upon the environs which surround them, but they are also affected by the social and economic situations found in these areas. In the past, some institutions have moved to entirely new sites because the neighborhoods in which they were located were not compatible with the institution or purpose. Such situations as these which have influenced some colleges and universities to embark into area planning which extends the projection of campus plans into areas of immediate interest outside of their property boundaries. It is therefore important when preparing a campus plan that an individual institution recognize that its own planning must go beyond the campus boundaries.

The expansion of campus areas also presents excellent opportunities for college and university participation in local urban renewal and redevelopment objectives.

Section 112 of the Housing Act of 1949, as amended by the Housing Acts of 1959 and 1961 provides federal loans and capital grants to be used in the redevelopment of non-residential land for campus expansion. However, any redevelopment must be in accordance with an urban renewal plan that provides a cohesive neighborhood environment compatible with the needs and functions of the educational institution.³

The Planning Process. Campus planning is a complex and expensive process and an adequate comprehensive plan for any college or university is not developed overnight. A single line cannot be drawn until there has been many months of conferences with the faculty and administration.

Before the planner is able to establish the most preliminary development plan, the institution must first arrive at its own understanding of the overall goals of higher education in terms of educational philosophy and national needs. Then it must determine what role it desires to play in the total picture. Once these decisions have been made the educational programs may be established.

Programing the Development Plan. The comprehensive campus development plan is a design formed as an answer to a set of criteria called the program. The program is based upon the policy decisions of the individual institution and is also basic for the formulation of the academic plan.

In order to establish a program, the institution must take action and make such policy decisions as the following: "How many students will it enroll? Will it accept all applicants as long as they hold a high school diploma, or will it be selective? Will

³ Title 1, Housing Act of 1949, Section 112 (a), (as amended by Housing Acts of 1959 and 1961)

the institution limit its educational offerings to a four year liberal arts program, or should it extend its curriculum to graduate work, professional degrees and vocational technical programs? To what extent will the college or university maintain research activities? What services will it provide to the community? Will it be a residential college, a commuter institution, or both?"

Once these and other policy decisions are made, the educational objectives and goals may be translated into a specific program. The faculty and administration should establish what degrees will be offered and the courses of study required. Then the academic plan may be developed as a coherent system of schools, colleges, departments, research units, institutions, and service organizations, which in turn establish the program for the development plan.

Enrollment Projections. The physical growth regarding the physical plant of a college or university may be projected by examining enrollment projections, evaluating what these projections mean to the future physical plant and by making sound judgments in relation to what events or conditions will affect these prognostications.

Future enrollment projections are based upon the assumption that the 18-21 age group comprises the college age in the United States. Few students under 18 are enrolled in higher education, but many students over 21 are enrolled in graduate courses. The correlation between the total age groups which attend colleges and universities provides a satisfactory basis for future enrollment projections.

There are several methods for projecting future enrollment and many factors which influence these methods. Therefore, it is necessary that each institution adopt an individual procedure which will project as accurately as possible its future enrollment.

Upon establishing the future number of students the college or university may expect, the enrollment predictions are then projected throughout each stage of development. An analysis should also be made regarding the future enrollments at each academic level and, if possible, a breakdown established by sex and marital status.

Future Physical Plant. The next step in the planning process is to outline the physical plant facilities which will be required at each stage of development. These facilities are based not only upon the educational goals, the program, and the academic plan, but are directly related to the projected future enrollment.

The requirements of the future physical plant are divided into functions such as instructional, research, administration, housing, recreational, and auxiliary. Once these requirements are defined, their interrelationships must be established in order to provide a basis for the preliminary location of each function and its relationship to the total development plan.

Physical Dimension. Once the facilities based upon enrollment projections have been established, their functions defined and their interrelationship analyzed; the physical dimension of the campus may be outlined. This objective is accomplished by utilizing space standards which consist of appropriate allocations of space per type of activity per person. Because some facilities can be used by more than one person during any period, a single gross square footage standard per person on the campus is not adequate for general planning purposes. It therefore is necessary to establish a separate space utilization factor when estimating each different use or facility space requirement. The constituent parts of the campus must then be separated into program areas and their individual space requirements measured and their interrelationships established. The procedure results in a meaningful appraisal of space needs and space

standards, and thereby provides a realistic estimate of the physical dimension of the campus.

Old Versus New Campus. The planning process for a new campus as well as for an existing institution generally follows an identical procedure through the first campus planning elements, but at this point the procedure somewhat varies in scope and methodology. This variance is due to the problem of existing buildings, existing site, and an existing academic process which an established institution possesses.

When a campus plan is prepared for an existing college or university, an extensive analysis of the existing plant, grounds, circulation elements, utilities, and the neighborhood surrounding the campus must be made to determine their adequacy and relationship regarding the new program. Buildings must be studied in order to determine whether they require replacement or renovation or if their location interferes with effective planning for expansion. Utilization of all building spaces must also be studied to determine if expansion can be achieved through more efficient use patterns and if the present facilities may be incorporated efficiently into the overall development plan. From these additional studies, incorporated with enrollment projections and associated space requirements, a preliminary comprehensive campus plan is prepared. This plan would establish the physical dimension required, buildings to be retained, renovation projects, buildings to be destroyed, and other improvements necessary to adapt the existing facility to the needs of the future.

Preliminary Plan. A graphic presentation or schematic preliminary comprehensive plan may be established once the physical dimensions have been determined. While this preliminary plan may only be a "Balloon Diagram", laying out the required

elements of the campus in hypothetical fashion, it will identify the approximate location of construction sites and open areas which will be required in first stage construction as well as to establish a rough prediction of building locations in later development stages. The preliminary plan will also be utilized in determining the general nature of a site which would be adequate for a new campus as well as providing the necessary information for the expansion of existing institutional facilities.

Site Selection. When an existing college or university develops a comprehensive plan for growth, expansions need not be limited to the old campus but may take one of four forms: first, an increase in the type of facilities already present; second, duplication through the addition of separate graduate or professional schools on the campus; third, duplication through the creation of a coordinate or satellite campus; and fourth, the relocation by the creation of an entirely new campus on another site.

Site selection for a new campus is usually a complicated step towards the development of an adequate campus plan. Size is the most obvious requirement in selecting a site and is entirely related to each individual institution. Also, when selecting a site, the shape, the nature of the terrain, subsoil condition, and natural hazards must be considered. The campus must be reasonably accessible by auto, bus, railroad, air, and in some cases, by rapid transit. While it must be accessible to as many forms of transportation as possible, it should not be bisected by any railroad or heavily travelled highway. Also the site should not be surrounded by urban blight, heavy industry, or as the University of California has discovered, be located under or near the flight path or approach to an airport.

Campus Design. After the site has been selected, the detailed design of the campus development may begin. The design of a campus is particularly concerned with

the search for an appropriate style and campus form which is directly related to the structure or skeleton of the institution. In order to provide a design structure for the campus, the individual uses are grouped according to their program relationship. Such buildings as the library, administrative, and union building are instructional support activities which are given high priority, and are typically located in the central academic area.

The design size of the central academic area or campus is usually related to space and time elements and based upon the maximum distance that can be traversed between classes. Though ten minutes is the typical period allotted for changing classes, it is not a standard by which the limits of the central campus may be designed. Instead of the maximum distance, it is the critical factor in the interchange or convenient movement of many people from place to place on a time table schedule. This interchange must be carefully measured when establishing the central zone limits. Because of campus activities, lack of planning, site impediments, and other physical problems, this factor will vary from campus to campus and will establish different sizes for central academic zones to meet the needs of each individual college or university.

Outside the central campus are established the organized sectors which bring together such related programs as housing, recreation, and athletic areas. Even though each of these programs has defined the relative importance for the internal development in each sector, the programs are also arranged so that they express and complement the interrelationship between all land uses established in the development plan.

The character of the campus must also be considered in the design of the overall plan. In the past, campus design favored the classical or formal structure. This formal structure was obtained by determining the sites for buildings in advance, by establishing

massing and scale, by exploiting topographical advantages and special incidents, and finally by integrating roads, paths, and landscape into a unified whole. Through the years these formal plans have lost prestige and colleges and universities of today lean toward the functional campus layout.

The functional structure is less rigid than the formal plan, but still defines precisely sites for both construction and open spaces. The construction sites are organized into building zones with permissive standards such as floor area ratios, set back lines, parking requirements, and ground coverage ratios established for each zone and which are based on design studies. These standards allow great flexibility in project design, but at the same time control the density, character, and location of development.

The utilization of zoning districts or areas as a means of developing a comprehensive plan have been particularly effective in developing the functional campus design. Three different zones are defined and each is reserved for the purposes or uses designated by previous studies and analysis. One zone has been provided as the academic core, restricted to the instructional processes and the area of contact between students and faculty. Another zone is set aside for residential purposes and limited to student residence. The third zone is the activity zone, where the students, the faculty, and the public come together for athletic, recreational, and cultural events or as part of the administrative process. In some cases, separate zones and even separate campuses are designed for research, varsity athletics, and other facilities.

Amenity also has an important role in the design of the comprehensive campus plan. Though amenity is a desired goal in its own right, it has a special purpose in campus planning because of the peculiar nature of colleges and universities. This special

purpose or role is to provide the physical and psychical relief from the heavy demands placed on students and faculty who live, work, and play in the single environment established by the institution. A well designed building or group of buildings may produce amenity; but in campus planning, amenity will depend largely on how the landscape is treated.

Final Development Plan. The site or expansion area having been selected and the preliminary campus design established, the "Balloon" or diagramatic plan is now adjusted to the actual site conditions. The final development plan, as a summary of program instructions and design feasibility, thus establishes the overall design structure and provides the required planning and design controls to guide future development.

Once the final campus development plan is established, it is a guide to the future growth of a college or university. Although based upon the most accurate criteria, assumptions, and projections available, the plan is subject to change because of unforeseen occurrences. Therefore, the plan must not be a static document but should be a flexible continuing process, with the possibility of adjusting to the changing demands of a growing institution.

Implementation and Continuity. After the final development plan has been adopted, it must be implemented. Sometimes this is the slowest element of the entire planning process, but if the plan has been constructed upon sound planning principles, if its solutions are directly related to the academic goals of the institution, and if the proposed future development is financially feasible, implementation should occur without too much difficulty.

As the development plan is being implemented it is extremely important that planning also be carried on as a continuous administrative activity. Continuing planning

is beneficial as a means by which to identify changes well in advance of project execution, reduce snap judgments, and premature decisions on capital improvements and as an orderly and systematic schedule for improvements. Although these functions are all important in the growth and future development of the campus, continuing planning is most useful as an instrument for change. During implementation, emergency demands and special situations may arise which have not been included when preparing the plan and which, therefore, require making changes. Through continuous planning, however, these unforeseen changes can be incorporated, and the overall design plan adjusted accordingly.

Not only while developing the comprehensive plan, but also throughout the implementation of the plan it must be remembered that a college or university is more than human and real estate elements and that what happens to the student during his years of college will directly influence his future. Thus, the environment a student will experience while acquiring his education must be considered throughout the entire planning process.

The development of a comprehensive plan is a complex time consuming process. There are no short cuts and no standard solutions. In order to develop an adequate plan for a college or a university, the planning process must be initiated a step at a time, through careful consideration of all related and influencing factors, and by weighing each individual problem and arriving at a solution which will enable the institution to fulfill all of its responsibilities. If these objectives are accomplished, the planning process will be successful.

CHAPTER VI

CONCEPTS OF CAMPUS PLANNING

The objectives of this chapter are to point out the wide spectrum of campus planning as it is being practiced today. Each college and university possesses its own academic goals, academic programs, and development problems which must be solved individually and specifically for each institution. There is no single solution or design which may be thrust upon all campuses as the salvation or guide to a coherent and healthy future development plan. Therefore, each college and university must develop its individual campus plan, solve its individual problems, and establish its individual guide for future growth.

Likewise, the planning concepts which influence the design and scope of campus plans vary from institution to institution. Willie M. Pena of Caudill, Rowlett, and Scott, architects, conducted a survey in 1958 which illustrated the wide range of planning concepts found on campuses across the United States.⁴ A few of these concepts have been carefully selected from this publication and other research sources, in order to indicate the broad scope of planning techniques.

University of California. The campus is planned around the library, with the academic facilities radiating from it and located within a ten minute class exchange area. The non-academic and research functions are located in the peripheral campus areas. The increased classroom utilization in the campus core is the key to the planning concept.

⁴Caudill, Rowlett and Scott, Survey of College and University Planning Activities, (The Authors, Houston, Texas, 1958) pp. 1-91.

Golden Gate Theological Seminary. The plan utilized a concentric ring concept with the religious education activities and chapel at its core. Surrounding the core is a ring of amenities comprising the cafeteria, student union, library, faculty offices, and outdoor recreation. The outer ring is comprised of small "villages" or clusters of men's and women's dormitories and faculty housing. Respect for the existing terrain is a basic premise of the plant. Buildings are deliberately conceived and located to harmonize with and complement the hillsides, valleys, and ridges of the site. Only in the heart of the seminary will greater formality be developed. Present valleys and folds are deliberately used to achieve separation and isolation for each residential village. The heart of the seminary is placed on a high knoll where a central mall, flanked by classrooms and the administrative building leads from the library to the chapel.

George Washington University. Here planning entails the closing of two through streets to create a superblock for classroom buildings, the administration building, a student union, and a faculty club. Three other functional zones are established for engineering and science, medical, and law buildings. Privately owned apartment buildings fringing the campus are being removed to provide a proper setting for a fine visual approach to the University.

University of Florida. In this plan a rigid land zoning concept is used in which certain areas are dedicated specifically for certain purposes. The core of the campus is a Y-shaped greenbelt integrating new and old instructional zones. At opposite ends of the core are housing zones for men and women each adjacent to on-campus fraternity and sorority housing respectively. The outer fringe is zoned for agriculture, athletics, military, and maintenance uses.

Florida Southern College. Frank Lloyd Wright designed this plan as a "Veranda" campus. Covered walks criss-cross the campus and merge here and there into the buildings so that the covered walks actually become the building. In most cases the identities of the buildings are lost, but an integrated harmony is gained.

Southern Illinois University. The original concept comprised a group of satellite living and teaching units ranged around a university center. In the satellite units is a core of dining, recreation, and some classroom and seminar facilities. Around the core is faculty housing with studios in which to teach. The outer concentric ring is comprised of student dormitories. Each satellite is separated from the next by play-fields. Inherent in the plan of the satellite was the intent for the student to have every opportunity for contact with the faculty both in the formal atmosphere of the classroom and in an informal neighborhood family situation. The comprehensive plan which was actually developed is largely divorced from the original concept.

University of Massachusetts. The campus is a series of concentric loop-roads and cross-roads. The plan seems to be inspired by what is described as "an effective heating radius", with the heart of the plan being the campus pond ringed by the old buildings. The outermost ring contains the housing and athletic facilities.

University of Michigan. Borrowing from the concept of suburban shopping centers, this university has crossed the Huron River and established a separate new campus rather than to expand its present facilities. The center of the new campus is a "Business District" for common uses by all students, including the library and student union building. The concept is compared with that of the Forums of ancient Rome. The entire campus is based on a strong necklace of smaller courts to be developed as needed.

University of St. Thomas. This campus turns away from the "group building in the park" and back to a more formal and more connected building group. It follows the medieval, or eighteenth century approach, rather than that of the nineteenth. There is a formal design in which there is a cloister built within and against a city-scape. All buildings face the pedestrian walk and the campus proper conforms to that of a "green street" than to that of a typical American campus. The sense of community that such an enclosure gives a campus seems to be much the same sense of cohesion that a cloister gives a monastery.

University of Wisconsin. The general plan for campus development is neither a "site development plan" or a "blueprint" for actual execution. Rather it is regarded as a statement of physical growth objectives, principles, and policies applied to anticipated university needs and expressed in graphic form. It is based on such a general plan, that the architectural site development plan, and the detailed engineering and working blueprints subsequently work out in a logical manner.

Catholic University of America. This campus has a building program rather than a planning program. Attempts are being made to free the old buildings for new uses by building new buildings to consolidate scattered facilities. The campus consists of a complete mixture of land use with parking, on-campus roads, and pedestrian cross circulation.

Summary. These selected concepts, while only a small representation, serve as an excellent review of the many different and varied approaches to campus planning. No attempt is made to evaluate these concepts or the campus designs they constitute; but assuming each effectively solves the problems of the individual institution, they are

then fulfilling their responsibility and purposes. It would be impossible to determine that one concept was better than another because each must solve a separate set of goals and problems and determine a specific solution for campus growth.

CHAPTER VII

CONCLUSION

It is quite evident that today's American colleges and universities are being challenged by the many responsibilities and demands placed upon them. These institutions are not only burdened with the responsibility of expanding the primary facilities for academic study and research, but they are also responsible for providing a broad scope of services never before demanded of them. The result of providing these responsibilities and demands is a complex pattern of academic, social, and service activities and functions which must be combined into a homogeneous campus design.

In the future these challenges will continue to intensify as the functions and activities of colleges and universities expand. Thus, the necessity for responses by these institutions will become even more acute. The failure of these institutions to accept and respond to these challenges will result in a chaotic development of non-functional and unrelated facilities, providing inefficient academic and research programs, with the total physical plant located on an inadequate site.

Campus planning is an important response to these challenges whether they occur today or in the future. History indicates that in the past very little was accomplished toward the application of comprehensive planning on college and university campuses. It was not until after the Columbian Exposition that campus planning was extensively applied to the design of college and university sites and only in the past ten years have campus planning advantages and contributions been enthusiastically understood and accepted.

The advantages of campus planning are in the planner's abilities to review and analyze comprehensively the total academic, non-academic, and physical responsibilities of these institutions. The contribution of a campus plan is that it provides more than a clarification of goals and articulation of programs in the total design processes. It is through planning that an appropriate comprehensive physical plan is prepared for these goals and programs, by grouping all of the complex elements of the campus into a singular and distinctive form, and at the same time provide for change and adjustment within that form.

The planning concepts practiced today vary from institution to institution. There is no single solution or universal pattern by which buildings and land can be united to form an effective and efficient campus. The design patterns and possible solutions are as many as the colleges and universities themselves, but these institutions do have one thing in common, in all are being challenged, and it is the individual college and university which must decide upon the response.

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CAMPUS PLANNING

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The American Colleges and Universities of today are being challenged by increased enrollment, changes in higher educational techniques and programs, and the increased complexity of the academic and physical campus structure. It is apparent that these colleges and universities must respond to these challenges, and soon, if widespread chaos is to be avoided.

As a response, comprehensive campus planning is an imperative prerequisite in the development of all future college and university campuses. It was the objective of this study to investigate the importance of campus planning in relation to the various challenges presently affecting institutions of higher learning, and to prepare a general campus planning procedure as the means of establishing an effective comprehensive planning study.

A review of the history of college and university development reveals that the evolution of campus planning has not been an easy or a rapid one. The early Colonial Colleges were noted more for their building types rather than as examples of campus planning; and it was not until 1893, and the Columbia Exposition, that widespread application of campus planning actually began.

Future campus growth is inevitable. Not only are there more people eligible for a higher education, there is also evidence that an increasing percentage of people are obtaining some form of education beyond a high school level. It is estimated that in 1970, American colleges and universities which now enroll 4,118,000 students will have to accommodate more than 7,000,000 and approximately 8,500,000 or more by 1975.

It is quite evident that today's colleges and universities are being challenged by the many responsibilities and demands placed upon them. These institutions are burdened not only with the responsibility of expanding the primary facilities for academic study and research, but also with the responsibility for providing a broad scope of services never before demanded of them. The result of a complex pattern of academic, social, and service activities and functions which must be combined into a homogeneous campus design.

The advantages of campus planning as a response are twofold. The first advantage is a planner's ability to review and analyze comprehensively the total academic, non-academic, and physical responsibilities of these institutions. The second advantage is that an appropriate comprehensive physical plan may be prepared by grouping all of the complex elements into a singular and distinctive form, and at the same time provide for change and adjustment within that form.

The planning concepts practiced today vary from institution to institution. There is no single solution or universal pattern by which buildings and land can be united to form an effective and efficient campus. The design patterns and possible solutions are as many as the colleges and universities themselves, but these institutions do have one thing in common; that is, all are being challenged and it is the individual college and university which must decide upon its campus planning as a response.